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THE HOME GARDEN

UTED IN FURTHERANCE OF THE ACTS OF CONGRESS OF MAY 8 AND JUNE 30, 1914

DIGEST

THERE IS AMPLE OPPORTUNITY for increasing the number and improving the quality of the home gardens in the State. Page 3.

THE HOME GARDEN should aim to supply the table with an abundance and variety of fresh vegetables during the entire season. Page 3.

THERE IS NO NEED for any part of the garden to be unoccupied by crops from January to January. Page 3.

THE IMPORTANCE of the home garden was never greater than at present, both from an economic and health standpoint. Page 4.

THE GARDEN PLOT should be located where it will receive at least five hours of sunlight each day. Page 7.

THE GARDEN should be systematically planned on paper before planting to insure the most satisfactory results. Page 8.

THE IDEAL GARDEN SOIL is a deep mellow, well drained loam of high fertility and retentive of moisture. Page 10.

IT IS NECESSARY that the garden be well drained. Page 10.

CAREFUL PREPARATION of the soil will insure satisfactory crops and will make tillage less tedious. Page 10.

LIME WILL IMPROVE many garden soils. Page 12.

COMPOST is an important source of humus and fertility. Page 13.

STABLE MANURE not only supplies fertility but improves the physical condition of the soil. Page 14.

COMMERCIAL FERTILIZERS are of value in nearly all gardens. Page 15.

TILLAGE is one of the most important factors in determining the success of the garden. Tillage should be thorough and timely. Page 19.

THE HOME GARDEN

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INTRODUCTION

s only necessary to observe the village and town gardens in our state come convinced that there is ample opportunity for increasing the num- nd quality of these plots. It is true that the war was an impetus to and vacant-lot gardening and that the number of home vegetable plots greatly increased, many people cultivating a garden for the first time, g it not only profitable from an economic point of view, but interesting ducational as well. With the ideal climate that we enjoy for growing ables it should be exceptional when a home, with available space, does ave a garden.

e ideal home garden should aim to supply the table with an abundance ariety of fresh vegetables during the entire season and provide a surplus oring and canning. The aim should also be to have vegetables of fine y which will be a source of profit and satisfaction to the grower. Few e realize the advantage that our long summers and sunny autumns give r the production of a constant succession of vegetable crops, and even realize that in this climate the garden need at no season of the year be loned to weeds. This is more especially true towards the eastern part e state. From January to January there is no need for there being any in the garden unoccupied by crops. Even if vegetables are not grown and should be producing a green manure crop. If the garden is care- planned there can be secured from the plot a succession of fresh vege- s from the time when the earliest peas are planted until the time when it cessary to prepare for them the following year. This succession can be more regular if hotbeds and coldframes are provided for the production ttuce, radishes, and other hardy types during the colder months.

e home garden will pay abundantly for the time spent on it if the ner sees that the plot receives careful attention. Failure is most fre- ly the result of neglect or poorly directed effort. The main objection to gardening is the tedious work that often goes along with it. The tendency is to plant an area too large to admit thorough preparation e soil, with the result that subsequent operations become laborious and teresting. If the soil is properly prepared and work done as needed from to time, care of the garden should not become a burdensome undertak- In starting a garden, it is well to have in mind a motto of the National

War Garden Commission, which says, "A small garden, well cared for, is
better than a larger garden neglected."

Successful gardening cannot be done altogether by rules. Each ho
gardener must draw on his own experience to supplement general instr
tions if he is to secure entire satisfaction. The beginner should consult w
successful gardeners in his community, visit their plots, and profit by th
experience.

This circular is one of a series written to supply information on garden
with the hope that it will prove of value to the prospective home garde
and that the number and quality of home gardens will be increased.

IMPORTANCE OF THE HOME GARDEN

Home food production in the form of home gardening activities is certai
a worthy endeavor. Besides the satisfaction of having a plentiful supply
fresh vegetables and the health-giving properties of this feature of the da
diet, it is of importance to remember the profit to be derived in actual mo

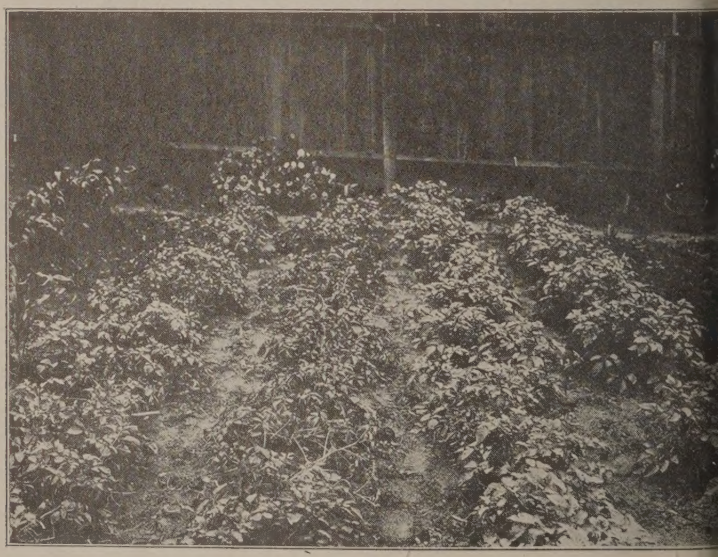

Fig. 1—Several rows of potatoes will furnish a supply for the family in early summer

value of home-grown crops. The value of the products of back-yard
vacant-lot gardens frequently total a surprising figure. According to
National War Garden Commission, during 1918, the people of the Un
States produced a crop valued at $520,000,000 in gardens located in b
yards, vacant lots, and in other land previously untilled. Compared to
acre of land worked by the usual farming methods the possibilities of l
devoted to vegetable crops are surprisingly large. It is good land ind
that will produce $100 worth of cotton per acre. Yet $500 worth of vegeta

common yield for land of equal fertility intensively cultivated and
ched. In the District of Columbia in 1918, official figures showed an
age yield of $700 per acre for nearly 2,000 acres, comprising 29,000 home
lens. A demonstration garden at the Purdue University Agricultural
eriment Station supplied products worth $65 from a plot 50 x 100 feet.
ıe home vegetable plot, however small, offers an opportunity to add to the
urces of the household. An area 5 x 20 feet is sufficient for radishes and
ıce during April and May and in the fall. The home garden is something
the whole family can be interested in and help to attend. The civic
e of gardens must not be lost sight of, for they make beautiful many
ghtly barren spots in our towns and have a tendency to develop civic
e. Town people, who garden for the first time, learn how finely flavored
ly fresh vegetables can be when they come direct from their own back-
l or vacant-lot gardens, and they are no longer satisfied with the flavor-
wilted products that they so often secure in the local markets. Gen-
ly, home-grown vegetables will be far superior to any that can be pur-
ed in the local markets, because they will be fresh. Many vegetables,
and green peas especially, lose much of their characteristic flavor after
are picked. Moreover, it is often impossible to buy the best varieties in
market because they are tender and difficult to handle. The coarser kinds
more easily shipped and as a result the market gardeners grow those par-
ar types.

ıe economic importance of the home garden was never greater than at
ent. In many instances high freight rates are making fresh vegetables
beyond the means of many people, and are often making it unprofitable
ıip them away from the center of production. Not only is it possible to
ıce the cost of the family's food supply by the use of home-grown vege-
es, but the satisfaction and convenience of having a supply of vegetables
ıys available cannot be measured in terms of money.

ıe of the strongest arguments in favor of the home garden is that it
ides the right type of exercise and recreation for business people who
d a great amount of time indoors. Manifestly, gardening is a healthful
vity. It has been found to be of value in the rehabilitation of convales-
soldiers. In the great reconstruction work at the Walter Reed Hospital,
teen-acre war garden proved of much therapeutic value in the treatment
ɔnvalescents.

egetables should form a more important position in the daily food of the
age family than is usually the case, for recent discoveries in the field of
ıan nutrition have shown the necessity of fresh leafy vegetables in the
and have caused a general realization of the value of fresh vegetables as
. The leafy vegetables, such as cabbage, lettuce, spinach, and other
ns, contain vitamines, which are essential food elements that must be
ent in the diet if man is to maintain an efficient state of health.

TYPES OF HOME GARDENS

mong the different types of town or village gardens can be mentioned
-yard gardens, vacant-lot gardens, community gardens, club gardens, and
ol gardens. Of those enumerated, the back-yard garden is by far the most
ortant because of its greater frequency and more intimate association

with the home. The back-yard type of garden has an advantage over th other types in that its nearness to the house is a decided convenience, bo in working the garden and for gathering the vegetables when needed. The is no doubt but that the home surroundings will be greatly improved and th back yard prevented from becoming an unsightly place if the space at th rear of the home is made into a vegetable plot. It sometimes happens th the back yard is not suited for gardening, being either too small, or shad too much, or the soil is such that vegetables cannot be successfully produce In such cases a nearby vacant lot can be used.

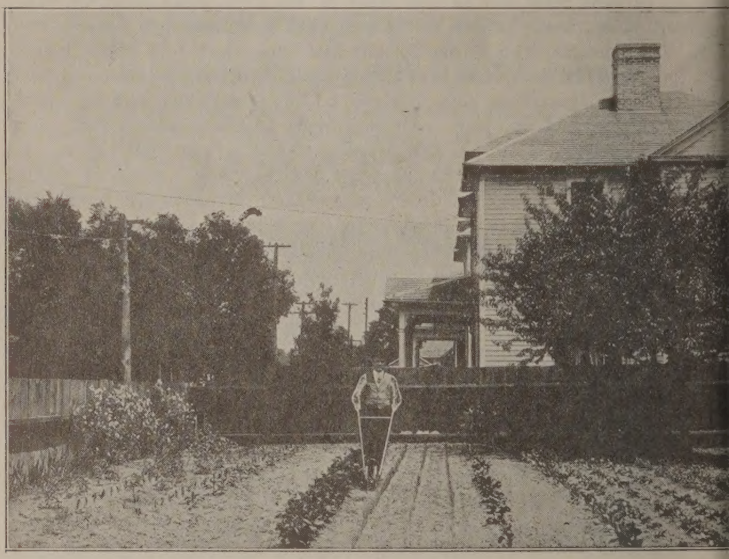

Fig. 2—Many vacant lots can be turned into profitable gardens

The vacant-lot type of garden is of increasing importance because it oft offers the greater advantage of larger space, soil of better condition, a more freedom from shade. During the last few years many successful vaca lot gardens have been produced in different parts of the state and this for of gardening is second in importance to the back-yard type.

While there has been little development in this state of either communit club, or school garden forms, these movements have been attended with su cess in other states, and they offer immense possibilities of development sections of North Carolina.

Club gardening under able direction can be made a very successful, as we as a profitable and interesting venture in almost any community. More tim can profitably be given to school gardens because they teach individuals at a early age some of the fundamentals of vegetable growing and they learn son of the economic values of home gardens in supplementing the family foo supply.

IMPORTANCE OF SUNLIGHT

planning the garden careful consideration must be given the amount of ht available daily to the plot. It is nearly always a waste of effort to n in competition with shade. Tillage, irrigation, and fertilizing cannot up for lack of sunlight. As a rule foliage crops, such as lettuce, kale, pinach succeed fairly well in partial shade, but must have at least three of sunlight a day. Plants that produce edible structures other than , such as the tomato, should have a minimum of five hours of sunlight lay and should be located in the sunniest part of the plot.

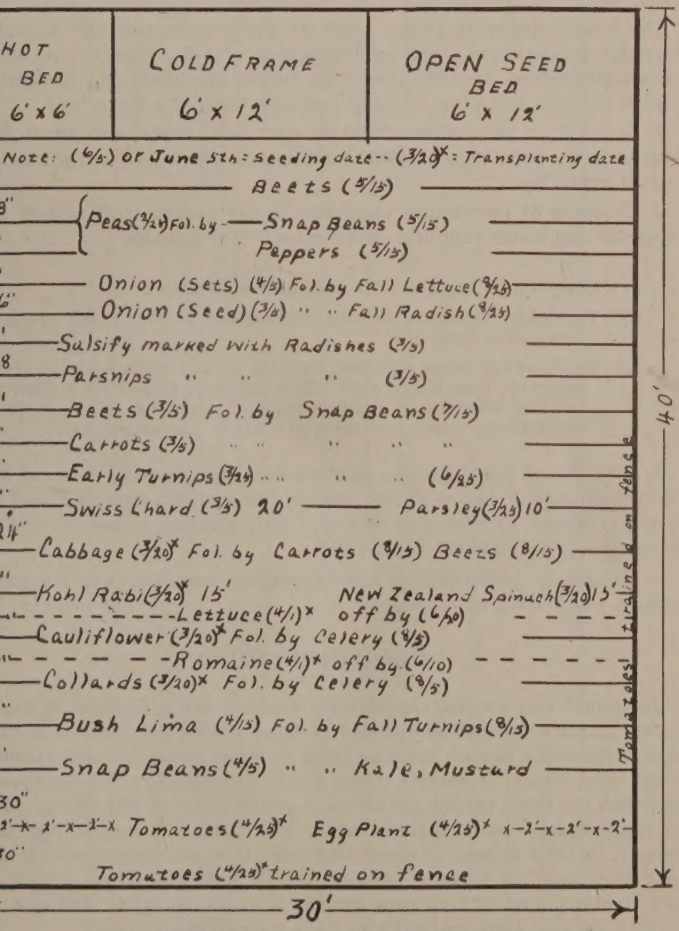
HOT BED 6' x 6'
COLD FRAME 6' x 12'
OPEN SEED BED 6' x 12'
Note: (6/5) or June 5th = Seeding date -- (3/20)x = Transplanting date
Beets (5/15)
Peas (3/24) Fol. by Snap Beans (5/15)
Peppers (5/15)
Onion (Sets) (4/5) Fol. by Fall Lettuce (9/25)
Onion (Seed) (3/6) " " Fall Radish (9/25)
Salsify marked with Radishes (3/5)
Parsnips " " " (3/5)
Beets (3/5) Fol. by Snap Beans (7/15)
Carrots (3/5) " " " " "
Early Turnips (3/24) " " " (6/25)
Swiss Chard (3/5) 20' Parsley (3/25) 10'
Cabbage (3/20)x Fol. by Carrots (8/15) Beets (8/15)
Kohl Rabi (3/20)x 15' New Zealand Spinach (3/20) 15'
Lettuce (4/1)x off by (6/10)
Cauliflower (3/20)x Fol. by Celery (8/5)
Romaine (4/1)x off by (6/10)
Collards (3/20)x Fol. by Celery (8/5)
Bush Lima (4/5) Fol. by Fall Turnips (8/15)
Snap Beans (4/5) " " Kale, Mustard
Tomatoes (4/25)x Egg Plant (4/25)x
Tomatoes (4/25)x trained on fence
Tomatoes trained on fence
40'
30'

FIG. 3—Typical plan for small back-yard garden

THE GARDEN DIAGRAM

A thorough and systematic plan for the garden, prepared on paper befo the active gardening season begins, is a necessity. It secures to the gardene when saved and compared from year to year, a concrete record of experien and thus directs practice to the end that a continuous and well-balanc supply of vegetables is assured. The diagram affords the best means visualizing the whole gardening plan or program for the year. It is a tim energy, and money-saver in that it avoids indecision at critical periods of t season and refines estimates of needs as to supplies, such as seeds, insec cides, etc.

The sample diagrams (Figs. 3 and 4) are only suggestive. A variety possible circumstances, such as limitations of area, family preference f certain vegetables, and the like, will dictate modifications. Generally t garden diagram will show, more or less completely, the following:

1. Location of perennials—rhubarb, asparagus, herbs, and small fruits usually to one side, so as to avoid interference with operations attending t annual vegetables.

2. Grouping of the annual vegetables in the garden with respect to si character and similar cultural requirements. For example:

(a) Early crops together—to facilitate cultivation.

(b) Vegetables maturing together—rendering greater space available f succession plantings.

(c) Tall-growing crops together, trailing (vine) crops together, crucife together, long-season root crops together, etc.—with a view to p venting shading of smaller-growing crops by taller, to facilita cultivation, insect and disease control, harvesting, etc.

3. Direction of rows, spacing, planting distances, planting date and amou of vegetable—with regard to best exposure to sunlight, method of cultivati (hand or horse), and economy of area, timely planting suggestion and fam preference or requirement of vegetables.

4. Companion (intercropping) and succession cropping to secure maximu returns and variety of vegetables.

CHOOSING CROPS

Vegetables that require considerable area for the production of an app ciable quantity will not be included in small garden plantings as a rule. this group would be such crops as Irish potatoes, sweet potatoes, melons, a sweet corn, which, in normal times, can be purchased in the market at le cost than the home garden can afford to produce them. The aim of the sm to medium-sized home garden should be, rather, to secure quantity a variety, in their season, of those vegetables that can be grown economical in limited area, as lettuce, radishes, onions, leeks, parsnips, carrots, char and similar crops. Where more ground is available, as, for instance, a c lot 50 x 100 feet, more extensive methods are in order.

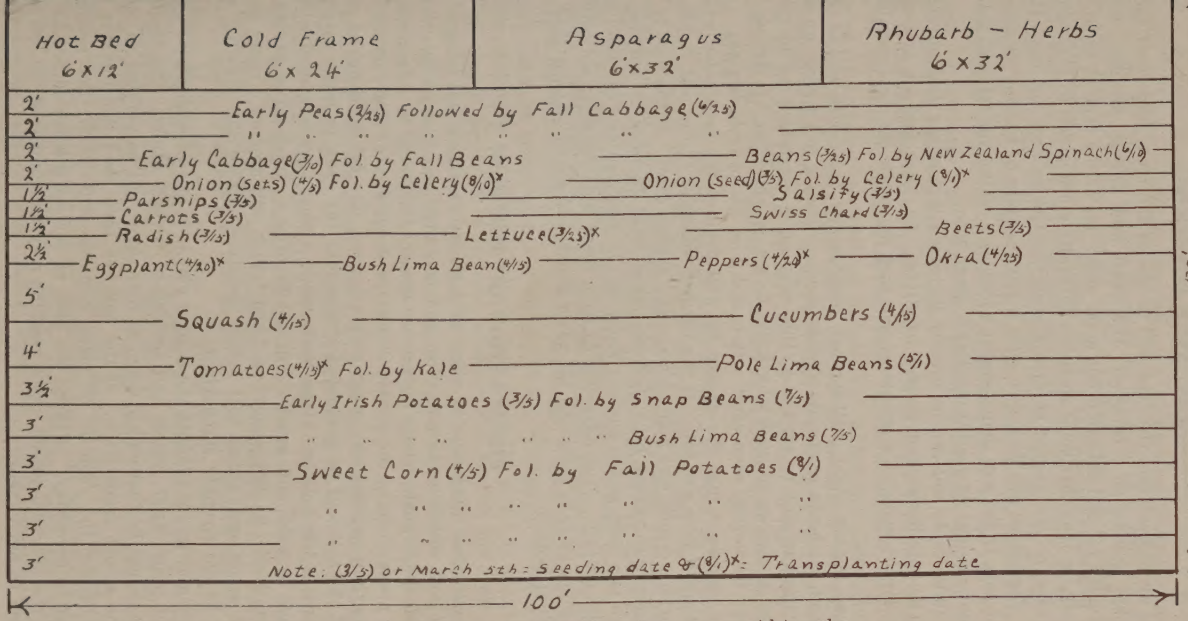
Hot Bed 6x12'
Cold Frame 6x24'
Asparagus 6x32'
Rhubarb - Herbs 6x32'
2' Early Peas (3/25) Followed by Fall Cabbage (6/25)
2' " " " " " " " "
2' Early Cabbage (3/0) Fol. by Fall Beans
Beans (3/25) Fol. by New Zealand Spinach (6/1)
2' Onion (sets) (4/5) Fol. by Celery (8/1)x
Onion (seed) (3/5) Fol. by Celery (8/1)x
1½' Parsnips (3/25)
Salsify (3/25)
1½' Carrots (3/25)
Swiss Chard (3/25)
1½' Radish (3/25)
Lettuce (3/25)x
Beets (3/25)
2½' Eggplant (4/20)x
Bush Lima Bean (4/25)
Peppers (4/20)x
Okra (4/25)
5' Squash (4/25)
Cucumbers (4/25)
4' Tomatoes (4/25)x Fol. by Kale
Pole Lima Beans (5/1)
3½' Early Irish Potatoes (3/25) Fol. by Snap Beans (7/25)
3' " " " " " " Bush Lima Beans (7/25)
3' Sweet Corn (4/25) Fol. by Fall Potatoes (8/1)
3' " " " " " " " "
3' " " " " " " " "
3' Note: (3/25) or March 25th = Seeding date & (8/1)x = Transplanting date
50'
100'

FIG. 4—Suggested plan for large town- or vacant-lot garden

SOIL MANAGEMENT

It is an evident fact that the soil is one of the most important factors vegetable production. However, the town and village gardener has lit opportunity for soil selection but must make use of the type at hand. Wh it is only too true that some soils are naturally more suited to gardening th are others, no one should be discouraged because he does not have the ide type. Vegetables can be grown with a fair measure of success on almost a type of soil, if the soil management provides a well-prepared seed bed and sufficient amount of readily available plant food.

An undesirable soil can be greatly improved in fertility and physical co dition by intelligent and careful handling. An improvement of surprisi extent can be made in a single season and the work can be continued ea year.

A deep, mellow, light, well-aerated, well-drained, and fertile soil is the ide for which all home gardeners should strive. Such a soil warms up early the spring and may be worked so that very early vegetables can be produc It is not necessary to wait long for it to get in condition. It drains rapid and may be worked soon after a rain and does not bake in drying.

It is necessary that the garden be well drained for vegetables will ma little growth in a wet soil. If the natural drainage of the plot is not suff ent, surface drains will help to make the garden drier. If the plot is plow or spaded into raised beds, leaving lower dead furrows or surface dra between the beds, excess surface water can be removed and the beds will d out more quickly. It is advisable to have these beds extended entirely acr the garden, as it is easier to till rows across the entire garden than acr individual beds.

PREPARATION OF THE SOIL

The gardener must bear in mind that plants require a soil in good con tion, a soil which holds moisture, and one that has a quantity of read available plant food. These factors are greatly influenced by soil preparati

Poor preparation of the garden plot is the cause of the failure of more ho gardens than possibly any other single factor. Careful work in the prepa tion of the soil will be evidenced throughout the year in more satisfacto crops and in less tedious tillage work, while a poorly prepared soil will pr laborious to work and usually will not produce a worth-while garden. T importance of a finely-prepared seed bed, which will produce a rapid germi tion of seeds and which will retain moisture during the growing seas cannot be too strongly emphasized.

Before plowing or spading the garden plot it is often necessary to clear t space of wood, brick, rocks, and rubbish of various kinds. The cleaning process should be thoroughly done, so that there will be nothing to interf with the actual preparation. If the plot has been used the previous seas for gardening the removal of plant remains will be all the prelimin preparation necessary. If there has been no serious disease outbreaks in t garden the previous season, plant remains may be composted, otherwise it advisable to burn them.

owing or spading the garden will be the next step in preparation. It is sable to have the plot plowed if it is sufficiently large and if so situated it can be broken without inconvenience. Otherwise, it will be necessary and-spade it. If the garden is made to produce as it should, it will be om that the entire plot can be plowed at any particular time. In those ions of the state where the all-year garden can be developed and in those lens where free use of soil improving crops are made, part of the plot will plowed in the fall and the remainder in the spring. In actual practice back-yard gardens where intensive practices are used, the spade will be e frequently employed in preparing different parts of the plot from time ime. In the larger back-yard and vacant-lot gardens, plowing in either fall or spring will be the practice.

it is the first year with the garden and the soil is inclined to the heavy , fall plowing or spading is desirable. Without question, fall breaking roves the physical condition of the soil and makes the land earlier in the ng. Fall-plowed land can nearly always be worked a few days earlier spring-plowed land. If fall-broken land is in good condition it will not l to be plowed again in spring, but can be gotten in condition with the row or hand-tools. Light sandy lands can ordinarily be plowed very early he spring.

the garden is plowed, make certain that the work is carefully done. n the attempt is made to turn a wider furrow with the plow than is sible, with the result that depressions are left between the furrows and it ifficult to put the plot in condition by later tillage.' If the plot is to be led, it will be found that a spading fork is much better than a spade for work. With the back to the plot, the gardener should start at one corner work sidewise across the tract to be turned, continuing to spade in this ner until the entire plot is covered. Invert the forkful of soil each time, king certain to pulverize it with a blow from the tool. It is advisable to spading at intervals to further pulverize and smooth the freshly turned If the plot has not been used in previous seasons, the work may be a er laborious undertaking if the space is at all extensive. In many cases ill pay the prospective gardener to employ someone to do this work care- y rather than to attempt it himself.

frequently happens that back-yard soils have been much compacted by mping over them, and it requires considerable labor to put them in the of condition. Generally, it will be advisable to break or spade to a depth to 10 inches and to loosen the soil several inches below this depth.

used to be a frequent recommendation to gardeners to plow deeply. This ot always desirable and the depth of turning should depend upon the racter of the soil and in some instances on the type of vegetables to be vn. It is true, however, that a deep, mellow surface soil is desirable and gardens in first-class condition should receive deep preparation, but e soils require careful handling to bring about this desirable condition.

and which is hard or in which the surface soil is shallow, should be ved or turned slightly deeper each year until the desired depth has been hed. Soils which are very sandy, open, with a very light subsoil, and ch are inclined to leach readily, should be turned comparatively shallow

and approximately the same depth every year, so as to compact the lo soil and to prevent excessive losses of fertility.

Some gardeners cut up the surface soil before turning, so that the bott soil will be finely pulverized.

For soils that are either heavy, compacted, or that have a tight, cl subsoil, subsoiling or trenching will often prove to be valuable in mak the soil deeper and in enabling the surface soil to drain and become mell and workable. Subsoiling consists of loosening the subsoil without turn it up to the surface. If the plot is plowed, subsoiling may be accomplished following in the furrow of the turn plow with a subsoil plow, thus loosen the subsoil which is covered when the next furrow is turned. Subsoiling m be accomplished when the garden is spaded by making a trench at one e of the garden, removing the surface soil to the depth desired for breaking plot, and then using either spade or pick to loosen the subsoil for a few inc but leaving it in place. When the next trench is turned the surface soil thrown in the prepared trench. This process is continued across the gar and the top soil removed from the first trench returned to the last one. this way the entire plot can be subsoiled with little trouble.

The soil should not be plowed when wet if difficulties are to be avoi later on in the care of the garden. This point cannot be too strongly emp sized with the heavier types. While there is no infallible method of determ ing when the soil is dry enough to plow or work, the simple test of squeez some freshly turned soil in the hand is as reliable as any. If, upon releas the lump, the soil does not stick to the hand, but retains its form and crumb readily with a little pressure, it is dry enough to work. It often happens t the gardener becomes hasty to do garden work in early spring and works heavier types of soil when too wet, with the result that they become lum and difficult to get in first-class condition for seed sowing.

In handling the all-year garden, where intensive methods are employed a successions of crops are grown, it may be advisable to turn or spade cert strips in the plot two or three times during the year.

After plowing or spading, the top soil should be pulverized to the depth turning and then smoothed with a rake. The surface of the unplanted p tion of the tract should be raked or worked at intervals to break up any cr that may have formed after rains and to keep free from grass and weeds. S a practice will conserve the soil moisture. The final preparation of the soi receive the seeds should be made only on that portion of the plot in wh plantings are to be made at once. This particular preparation should be s that a deep mellow finely pulverized seed-bed is provided.

It will not be possible to emphasize too forcibly the importance of previ preparation on the success of the operations that follow. If the soil is pr erly pulverized before planting the labor of caring for the garden will reduced and tillage will prove interesting and pleasant rather than laborio and tedious.

IMPROVING THE SOIL TEXTURE

Texture refers to the physical condition of the soil. Earth with good t ture should be deep, open, light, and mellow. There are few soils but w can be improved in texture by proper methods of handling. If the soil i

.l loam the usual preparation, as hitherto described, will usually pro-
ood texture. Where the soil is of the heavy type, additional steps are
necessary. Such soils are improved by turning under liberal amounts
ble manure, green manure crops, by the additions of lime, clean sand,
y the putting in of tile drains.

'ill often prove profitable to haul in a layer of sand from 4 to 6 inches
ınd work into the surface of the soil. Such a practice generally makes
sible to secure much earlier crops as it makes the soil quicker and
to work. Wood ashes, too, are useful in making a heavy soil lighter.

ften happens that sandy soils are too open in texture and that they do
etain moisture or fertility. The use of stable manure, green manure
and the addition of clay assist greatly in remedying this condition.

use of lime with some garden soils is highly advisable. This material
ets acidity; and at the same time promotes the important chemical
ss of nitrification. Experience teaches that lime may be used with profit
actically all soils in the eastern part of the state. On gardens which are
ground limestone at the rate of 150 pounds per 1,000 square feet of
n surface is recommended. Lime should be applied in early fall, but it
t advisable to apply it with stable manure or commercial fertilizer as
l cause loss of nitrogen.

e addition of vegetable matter or humus will not only improve the
cal condition of all types of soils, but it adds fertility as well. Stable
re, green manuring crops, and compost are the main sources of increas-
ıe humus content of the soil that are available to the home gardener.

e of the important considerations of the gardener is to keep up the
ıs content of the soil. This is especially so in those sections of the
where the garden can be cropped throughout the entire year. It should
's be remembered that the soil will not produce maximum crops unless
ntains a supply of decaying organic matter, although it may contain an
lance of plant food. Humus produces a loose texture and increases the
ure-holding capacity in close-grained, sticky soils, which have a tendency
ke. On loose soils it brings the grains close together and promotes
ical activity. It is for these reasons that market gardeners made an
st extravagant use of stable manure and compost.

COMPOST

mpost, or thoroughly rotted and decomposed organic material, is one of
ıost important sources of humus and fertility available to the town or
ge gardener, and is especially valuable as a means of improving the
ıs content of the soil. It is prepared by putting the material to be com-
d in piles several feet high and 6 to 10 feet long, with the tops flat and
perpendicular, four months to a year before being ready for use. The
ost pile should be built up in alternate layers of vegetable material from
12 inches thick and earth 2 to 3 inches thick. The top of the pile should
t so that the rain may enter and help in the process of decomposition.
ıe compost heap can be cut down and worked over several times,
ughly mixing the contents together, the material will be available for
t an earlier date.

In most sections a considerable quantity of refuse vegetable material be easily collected. All plant remains from the garden should be compos provided that they are not badly diseased. In this case they should burned. The remains of the pea and bean plants and other legumes especially valuable in this connection. The tons of leaves available every are a source of composting material that is much neglected by the t gardener. These leaves, properly composted, could be made an annual so of much valuable material for gardeners. It will be somewhat surprisin some, but nevertheless true, to learn that leaves have a greater fertili value in regard to plant food than stable manure and a greater amoun organic matter, ton per ton. It is necessary, however, to compost the le to get the best results. In composting them the addition of a small amo of stable manure causes a more rapid decomposition than would take p ordinarily.

Every gardener should locate near the garden, but screened from gen view, a permanent place for the compost heap, so that plant remains ma composted throughout the year.

Compost is valuable in improving the texture of the garden soil, becaus its humus content, and it is important also as a source of fertility. In connection it is especially desirable when quick growth is wanted. It ma spread over the garden and turned under or it may be worked into the r before the seed are planted. It is sometimes used as a top dressing during spring and summer to hasten the growth of plants.

MANURES AND FERTILIZERS

Nearly all garden soils respond readily and economically to manures fertilizers. When the garden is cropped intensively it is generally neces to supply fertility and humus to secure the best results. To produce v tables of high quality and in the shortest period of time it is necessar have plenty available plant food in the soil. (By way of explanation it m be said that plants require for their growth and development the chem elements of nitrogen, phosphorus, and potassium. These elements, as occur in combinations in the soils, are termed plant foods.)

STABLE MANURE

Stable manure is the best general fertilizer for garden soils because it only adds fertility but improves the physical condition of both heavy light soils by supplying humus. Fresh stable manure or manure tha coarse, should be applied and turned under in the fall, but if fine and rotted, it may be used in the spring, just before the final preparation of seed bed. If only a limited amount of finely divided, well-rotted st manure is available, it may be used only in the rows, carefully workin into the soil before the seed are planted. An application of from 1,00 1,500 pounds per 1,000 square feet of garden space is not too much.

GREEN MANURE CROPS

When stable manure and compost are not plentiful, green manuring c may be profitably used to supply fertility and to improve the condition of

The leguminous crops, among which may be enumerated, cowpeas, soy-, vetch, bur clover, and crimson clover, obtain nitrogen, an important food, from the air; and increase the nitrogen supply when they are d under. Rye, a non-leguminous crop, is sometimes used as a manure and it adds humus to the soil when turned under.

een manure crops prevent waste of fertility and increase the amount of food in the surface soil. They also keep the soil in good condition and nt it from baking during dry periods and washing during rainy spells.

opportunity for growing a manure crop in the garden should never be cted. When any part of the garden plot becomes idle for as long as six s, it should be planted to some rapidly growing legume to be turned r for green manure. Land becoming idle in early summer can be planted wpeas or soybeans which can be turned under before time to plant the to early fall planted crops. Land becoming unoccupied throughout the should be planted to vetch, crimson clover, or bur clover to be turned r the next spring.

COMMERCIAL FERTILIZERS

cannot be too strongly emphasized that commercial fertilizers, used without the addition of vegetable matter, will soon bring about an oductive condition of the soil. It should always be borne in mind that nercial fertilizers will not continue to produce satisfactory results ss the soil is well supplied with humus.

mmercial fertilizers can be used to an advantage in nearly all home ens to increase the amount of available plant food in order to give the ts a good start and to hasten maturity. Although different types of tables require different kinds and amounts of commercial fertilizer, it t practicable to use different formulas in the home garden, but it is more enient to make use of a general garden fertilizer. With the home garden abundance of fertility is more important than the proportion of elements.

owever, the soil requirements in certain parts of the state are so differ- rom others that it is not advisable to recommend a general garden ferti- that would be suitable to the entire state but one can be recommended each different section. All garden soils throughout the state, with the ible exception of those soils high in organic matter, require the addition trogen if the best results are to be secured. Ordinarily the light sandy of the Coastal Plain section of the state need more potash and less phoric acid than do the heavy types of the Piedmont and Mountain parts he state. For this section, a mixture analyzing 5 per cent nitrogen, 7 cent phosphoric acid, and 5 per cent potash is recommended. Lime lly gives marked results.

he soils of the Piedmont section generally respond to a fertilizer contain- nitrogen and phosphoric acid in liberal amounts. They are fairly high otash. A general garden fertilizer analyzing 4 per cent nitrogen, 7 per phosphoric acid, and 4 per cent potash will give satisfactory results. e often proves valuable, but it does not generally give the uniformly ing results that it does in the Coastal Plain.

The requirements of Mountain soils are somewhat similar to those of Piedmont section. Commercial fertilizers for the garden should be re tively high in phosphoric acid and nitrogen, with only a small amount potash. Lime in some instances will give good results. A general gard fertilizer analyzing 4 per cent nitrogen, 8 per cent phosphoric acid, and per cent potash is recommended.

No definite rule can be given for the amount of fertilizer to be applied the garden, as the quantity that should be applied will vary with the richn of the soil and its physical condition. The gardener can best determine t point by actual experience. Generally, it will be advisable to make an ap cation of from 35 to 50 pounds of commercial fertilizer per 1,000 square f of garden surface in the Coastal Plain, and from 25 to 40 pounds per 1, square feet of garden space in the Piedmont and Mountain sections. T fertilizer, when used in these amounts, should be broadcasted. If a smal amount is used, apply in the row a few days before planting the seed.

After making the application the fertilizer should be thoroughly worl into the first few inches of the surface soil with the garden rake. Thorou mixing of fertilizer with the soil is essential to prevent injury to the seeds young rootlets. It is never advisable to plant seed or to transplant you plants in direct contact with commercial fertilizer.

Certain types of plants are often greatly benefited by applications of fer izer as side dressings during their growing period. Lettuce, cabbage, spina and crops of this type, may be stimulated by side dressings of nitrate of so or sulphate of ammonia when they seem to have slowed up in growth. S dressings should be made between the rows at the rate of one-half pound fertilizer to each 20 feet of row. A more even distribution of the fertiliz material can be made if it is mixed with screened, dry earth before applyi It is a safe precaution to make the side dressing when the tops of the pla are dry, for it often happens that plants are burned severely if the applicat is made when the leaves are wet.

If the garden soil has become too rich in nitrogen, and this condition indicated by the growth of tops with little yield, as sometimes happens w Irish potatoes, the addition of both phosphoric acid and potash may prove value in inducing the plants to make tubers.

PLANTING PRACTICES

It is hardly possible to describe completely and satisfactorily the ma slights and practices by which experienced gardeners achieve success in th planting operations. General rules are quite valuable but should be modif to fit different combinations of circumstances.

For example, an old rule regarding the proper depth to plant seeds sta that they should be planted to a depth five times their thickness—wo remembering but not as reliable in particular instances as the directio given in Table 5, page 28, of The Farm and Home Garden Manual. Sm seed should be covered shallow—shallower in heavy clay soils than in san soils, and shallower in moist than in dry soils.

The quantity of seed to sow will be regulated by a number of conside tions, among them the power of the seed to germinate, the method of se

whether broadcasting or in drills, and whether the plants are to be ned or not. The standard for seed germination adopted by the U. S. De- ment of Agriculture, and set forth in Table 1, should be considered the of quality in connection with seed requirements.

TABLE 1—Standard For Seed Germination

	Per Cent		Per Cent
agus	80–85	Okra	80–85
	90–95	Onion	80–85
ge	90–95	Parsley	60–80
	80–85	Parsnip	60–80
lower	80–85	Pea	90–95
	60–80	Pepper	80–85
(sweet)	85–90	Pumpkin	85–90
	85–90	Radish	90–95
nber	85–90	Salsify	60–80
ant	60–80	Spinach	80–85
e	85–90	Squash	85–90
	85–90	Tomato	85–90
rd	90–95	Turnip	90–95

oadcasting will seldom be practiced in the small-sized home garden, pt, possibly, in beds where plants are started that will be transplanted . Plantings will usually be made in rows or drills accurately laid off the garden line and hoe, rake or wheel hoe, thus making for straighter , easier cultivation and consequently better attention and yield of vege- s. Thinning is made easier when seed is drilled, the thinnings are some- s transplanted elsewhere, but in large gardens the work becomes tedious is avoided by sowing less heavily. If there is any doubt as to the inating power, however, it is advisable to seed thickly and be assured a stand of plants.

rming the soil after the seed is covered is a practice that is generally hy of recommending, as it secures closer contact of the soil particles the seed and induces stronger capillarity, thus furnishing moisture more ily and promoting more regular germination. Treading the row with the or compacting with the hoe, a board, or a roller accomplishes the effect. n the soil is largely clay caution should be observed, especially when iderable moisture is present.

less the seed bed is carefully prepared, that is, the soil worked into a , mellow, finely-divided condition, the operation just discussed will not e as effective as intended. Coarser seeds will tolerate, to some extent, careful preparation of the soil, but for most garden seed, which are rally small, the proper fine texture and perfect physical condition must ne rule for the most satisfactory germination.

IRRIGATION

eat, light, air, soil, and moisture are the fundamental factors in the th of plants. The first three are favorably assured as a matter of on, the fourth, although variable, may be depended upon, but the last is

the most variable of all. For the very best results moisture must always b present in regular and plentiful supply. While there is rarely a season o absolute crop failure from lack of moisture, there is as rarely a season whe optimum conditions obtain because of the certainty and timeliness of rainfal It is therefore manifest that artificial devices by use of which moisture con ditions can be absolutely controlled are extremely desirable for consisten gardening.

Fig. 5 The wheel hoe makes tillage easy and rapid

Where pipe connections are available a garden hose is the most satisfactor means of watering. Overhead irrigation systems, consisting of galvanize pipe with small holes drilled and nozzles inserted at 3 or 4-foot interval mounted on posts and running the length of the area, have proved ver successful in permanent gardens as well as in specialized vegetable produ tion. Results have usually justified the expense, especially for situation where the garden hose is inadequate to the task of watering the whole garde in reasonable time. Small furrows, opened between the rows of crops an mulched again with dry soil several hours after the water is applied, may b employed to advantage when the contour of the ground is suitable and th soil neither too porous nor impervious. The watering can, listed with garde tools elsewhere in this publication, can be used in limited situations, when none of the foregoing conveniences are available.

A word as to the timeliness and thoroughness of watering is in order. I is far better to soak the soil once a week, to the depth penetrated by the plan roots, than to give light surface sprinklings more frequently. Moisture i taken into the tissues of the plant through the roots. Late afternoon is th best time to water the garden.

TILLAGE

ter the garden has been broken, tillage is the most important subsequent tice in determining its success. Without a doubt, much ground, seed, labor are wasted every season because many people who succumb to the ening "fever" each spring lose their enthusiasm with the coming of hot and fail to till the garden. It is only too true that tillage frequently mes laborious, especially during the warm period of the season, but much ne drudgery of later tillage is the result of poor previous preparation of soil. If soil preparation has been carefully and intelligently made, tillage ld never become laborious, but should be easy and pleasant to accomplish.

6—Garden tools. From left to right they are: Hoe-rake, potato fork, spading fork, potato fork, steel-toothed rake, hand cultivators, mattock, garden hoe, weeding hoe, hoe-cultivator, garden mattock

ever get behind with the tillage work. When the soil becomes hard and ds get started, working in the garden is likely to be tiresome and uninter- ng. Remember, if a satisfactory garden is to be secured, the vegetables st be carefully tended throughout the season, and tillage must be thorough timely.

he role of tillage consists in maintaining the soil in good condition for growth of the plants. Its importance in this connection is threefold. It vents the rapid evaporation and loss of moisture from the soil, it makes nt food available, and it keeps weeds in check.

he conservation of the soil moisture is one of the most valuable purposes illage. Generally, as soon as a rain is over, evaporation from the soil

begins. The moisture that has just soaked in comes up through the soil evaporates through the surface soil into the air. A mulch of finely div soil, or "dust mulch," tends to prevent this loss, while a crust forming the surface is conducive to it. The rainfall during the growing seaso sometimes insufficient for the vegetables and it becomes necessary for plants to make use of the supply stored in the soil from winter rains. this reason it is important to conserve the moisture from winter rains the use of the crops during summer. This is accomplished to a certain de by preparing the land early and maintaining a surface mulch over it unt is planted. This practice of early preparation and subsequently maintai a surface mulch is equally important for land that is not to be planted u late spring.

Fig. 7.—Small hand tools. From left to right they are: Hand-scrape weeder, small cultivator, dibble, trowel, putty knife for transplanting small plants

Careful tillage kills out the weeds and prevents them from competing the garden crops. Weeds should be destroyed just after the seeds germi Tillage at intervals of a few days before planting makes weed control planting much easier.

Tillage should be timely. As a general recommendation it should be g just before planting, immediately after planting, once a week or ever days provided soil conditions permit, and as soon as permissible after rain.

Sandy soils can be worked much sooner than clay types after a rain. soils of a clay type or heavy nature, tillage should not be attempted w they are wet. If soils are worked before drying sufficiently, the soil part will cement together in clods which are very difficult to pulverize. The of squeezing a handful of soil can be used to determine if it is dry enoug till.

It is not necessary for tillage to be deep, instead it should be shallo that a shallow layer of dust-like soil 2 to 3 inches deep is formed over surface of the garden at all times.

TOOLS FOR THE HOME GARDEN

he essential tools for a small garden are comparatively few and inexsive, some of them may easily be of home manufacture. Any garden ipment of tools should include a hoe, a spade, or a spading-fork, a trowel, ibble, a steel-toothed rake and a planting line. Other tools hardly less ispensable are a mattock or pick, a shovel, a garden hose or watering can, and weeder, a wheelbarrow and a wheel hoe or cultivator.

or medium and large gardens the wheel hoe will prove to be a great time labor saver in that, by employing the attachments commonly supplied h a wheel hoe outfit, almost any of the operations attending cultivation of garden crops may be performed.

he additional convenience of such tools and accessories as dibbles and d-weeders will become manifest to the gardener who has hotbeds and lframes to attend. The garden line will prove handy in marking straight s in areas where the vegetables are to receive especial care, or more than average amount of hand work. A hand cultivator or wheel hoe is a likely venience in any garden situation and more particularly with medium and ge sized gardens where horse cultivation cannot always be had at the most ortune moment.

THE NORTH CAROLINA GARDEN PUBLICATIONS

The need for gardening information is indicated both by the number and type of farm and town gardens and by the many and varied inquiries received regarding the different phases of garden culture.

The town and farm gardens of North Carolina, while closely related in principal objects and general methods, have problems in the execution of methods and the achievement of objects that are peculiarly different. In presenting the information on gardening in the following publications, these common relationships and differences are recognized and made the bases for the division of material to best serve the needs of each type of garden.

Hence, the circular intended especially for the home gardener will be of little interest to the farm gardener and *vice versa*. The manual is composed of general information with application to the needs of both types of gardeners and it is best employed in conjunction with either of the other publications.

Extension Circular 121. The Home Garden.

The typical home garden, within the conception and intention of this circular of garden information, is characterized by limited area, close plantings, consistent hand work, and with the recreational feature essentially important. Methods are relatively intensive, with large and regular yields from a comparatively small area the main object.

Extension Circular 122. The Farm and Home Garden Manual.

The production of vegetables is the common object of both the farm and home garden. Fundamental principles and information dealing with the nature and culture of vegetables, their climatic requirements, storage, and certain other considerations, have equal application to both types. The manual presents this general material in a readily accessible form.

Extension Circular 123. The Farm Garden.

The farm garden is an important department in the farm economy. The methods employed are extensive as opposed to intensive. Relatively unlimited area, wide plantings, and more horse work conspicuously feature the situation. Recreational objects are generally negligible.

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